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Full Length Research

Determinants of organic food buying behavior: A Pilot Study of Consumers in Huntsville, Alabama

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The common scientific approaches to the reasoning of problems are either mathematical or statistical reasoning. The mathematical or formal reasoning is mostly deductive, in that one reason form, general assumptions to specifics using mathematical logic and axioms for multi-criteria decision-making of organic buying behavior. The rapid growth of the U.S. organic industry has caused a major shift in the types and numbers of organic food retailers, manufacturers, and distributors and has widened the retail customer base. Furthermore, organic food industry is becoming an important sector in Alabama, but few studies have been conducted to assess the industry's potentials and constraints and examine consumers' valuation of and willingness to pay for organic food products. Present paper aims to examine the impact of socio-demographic characteristic (Age) and knowledge (where to buy organic food) on buying intention of organic food. Data collection took place in January 2017. Purchasers were approached while food shopping in one of three retail chains in two different areas of Huntsville (one outlet per chain), using a structured questionnaire. Overall, 40 people were approached, 23 of which were qualified for sample inclusion in the time frame of the survey (57.5 percent). SPSS IBM Statistics Software v.23 was used for all statistics analysis. A Multiple Linear Regression Model was used to assess the degrees of impact from each individual determinant on buying intentions. The research findings demonstrated that knowledge and age are the two key determinants and demonstrated a significant positive impact with ever buying intention of organic food or beverage products. The paper concludes that stimulating buying intention would employ as one of the strategies to persuade consumption and increase the demand for the organic foods. Policy makers need to draw special attention on improving knowledge levels and promote the specific health benefits of organic food in order to stimulate real buying decision.

Keywords: Buying knowledge, Purchasing behavior, Organic food, Organic products, Knowing place to buy organic food, Consumer's age.

INTRODUCTION

The common scientific approaches to the reasoning of problems are either mathematical or statistical reasoning. The mathematical or formal reasoning is mostly deductive, in that one reason form, general assumptions to specifics using mathematical logic and axioms for multi-criteria decision-making (Oluwoye,1997). Oluwoye et al., (2017) elaborated that, "There has been both a significant and major shift in the types and numbers of food retailers, manufacturers and distributors in the organic food

industry due to the rapid growth of this sector and this have consequently widened the customer base at the retail level. The retailing horizon of organic food products has changed with traditional purveyors facing increased competition from new companies; also, organic food point of sale was now not only limited to natural-product stores like whole foods and food cooperatives, but now included traditional supermarkets and club stores such as Wal-Mart and Costco respectively. As at 2008, organic manufacturers were either in direct competition with traditional food manufacturers or had been absorbed by these firms. The consequent effect of these changes has been twofold: both the number and average size of participating firms are now larger. Almost everything influences food choice, at one time and place or another. The relative importance of 'demand pull' from green consumers or 'legislative push' from socio-environmental legislation varies widely between different forms of the market.

Over the past 20 years, organic farming has grown rapidly transforming the European countryside. Since the 1992 MacSharry Reforms (1992)**,** the European Union has modified its Common Agricultural Policy (CAP) to include payments to farmers for the provision of environmental services and the preservation of nature. Among the agri-environmental measures, payments to farmers producing under organic methods constitute a major component of the Second Pillar of the Common Agricultural Policy, which explicitly focuses on Rural Development and has gained significance over the last years. The rapid growth of the U.S. organic industry has caused a major shift in the types and numbers of organic food retailers, manufacturers, and distributors and has widened the retail customer base.

A growing appetite for organic food in the United States translated into an increase in retail sales between 1997 and 2008. Over these years, the organic food sector transformed; by the time retail sales reached $21.1 billion in 2008, structural changes had revamped organic food marketing (Nutrition Business Journal, 2009). Retailing organic food changed as traditional purveyors of organic food faced increased competition from companies new to the sector, with organic food sold not only in natural-products stores, such as Whole Foods and food cooperatives, but also in traditional supermarkets such as Safeway, big-box stores such as Wal-Mart, and club stores such as Costco. Organic manufacturers by 2008 were either competing directly with conventional food manufacturers or had been subsumed by conventional firms. The effect of the structural change at the retail and manufacturing levels has been two-fold: (a) there are more firms participating in the sector, and (b) the average size of these firms is larger.

One byproduct of rapid market growth has been periodic shortages of organic products due to the inability of organic farms to supply enough products to keep pace with demand. Increases in acres of certified organic farmland (the best available measure of organic production-data on actual production are unavailable) have lagged behind growth in demand and have been relatively volatile during the decade. The organic food industry has been the subject of much media attention over the past decade. First chronicling its massive year over year growth rates and increasing popularity in the wake of the current economic recession, and falling sales numbers. Within the last month, there has been significant attention paid to the subject after the release of a major report questioning consumers' perceptions of the quality of organic food. These developments have made the organic food space very topical and the recession presented a unique opportunity to validate whether many of the conclusions drawn during better economic times were still valid amongst falling consumer confidence and a significant drop in consumer spending (especially on organic food products). Almost everything influences food choice, at one time and place or another. The relative importance of 'demand pull' from green consumers or 'legislative push' from socio-environmental legislation varies widely between different forms of the market. In most markets, the final consumer and the buyers within any marketing intermediaries are an important influence on the greening process. Marketers saw increasing consumer interest in the environment as a marketing opportunity to target ecologically-concerned consumers. Some businesses and industry groups have responded to environmental concerns by integrating environmental issues into their corporative policies. Organic foods are made according to certain production standards. The National Organic Standards Board of the US Department of Agriculture (USDA) established a national standard for the term "Organic." Organic food must be produced without the use of sewer-sludge fertilizers, most synthetic fertilizers, and

pesticides, genetic engineering (biotechnology), growth hormones, irradiation, and antibiotics. Environmental Marketing is based on three principles: social responsibility, the pursuit of sustainability and a holistic approach. It is open-ended, focuses strongly on the natural environment, has an intrinsic value and focuses on global concerns rather than those of particular societies.

INSIGHTS FROM THE LITERATURE

This section and the keywords perceptions of quality and price premium are extracted from Oluwoye et.al., (2017) paper entitled "Consumer Perception of Organic Food Products and Purchase Behavior of Shopping in Outlets of Retail Chains: A Pilot Study of Huntsville, Alabama", and Oluwoye (2017) paper entitled "The Association between Consumers' Socio-economic Factors and Knowledge of Organic Food Products in Huntsville, Alabama: A Pilot Study. Psychological factors that influence an individual's decision when purchasing as the individual's motivations, perceptions, learning, and beliefs (Callwood, 2013). Consumer behavior may be defined as the mental, emotional, and physical activities related to purchasing, utilizing or disposing of products and services that satisfies a need (Priest et al., 2013). Attitudes affect intentions; the more desirable the attitude is, the greater it will, and intention to carry out a particular behavior will be (Tarkiainen and Sundqvist, 2009). They claimed that attitudes are communicated between people, and thus, people with positive attitudes regarding a product will affect the attitudes of their surrounding people. As a result of this crossover effect, subjective norms will be seen as a precursor of attitudes in this study.

Among the small number of studies working the subjective norms related to the purchase of organic food, it was discovered that there is an important relationship between subjective norms and attitudes. Klöckner (2012) explains the complexity of human decision-making concerning purchasing organic food. Their model framework is outlined with the nested structure of decision, and the impact of earlier decisions has on the decisional space of later decisions. Environmental consideration has been suggested as a motivating factor. Ling (2013) evaluated consumers' intent to purchase the green product as a means to examining the driving variables that influence consumers' purchase intent. Other studies have indicated the relevance of socio-demographic and cultural factors such as, product quality, price, place of sale, ambience, country of origin, and convenience in purchasing affect purchase decisions of food consumers (Van Waterschoot et al., 2008; Akpinar et al., 2009; Gupta, 2009; Vukasovič, 2013). Shafie and Rennie (2012) suggested that future studies should go for a consumer-based approach which is important not only for consumers but also regarding responses to changes in market dynamics.

Perception of Quality

Previous literature has suggested that the way consumers perceive the quality of organic food has played a big role in its rapid expansion. (Essoussi and Zahaf, 2008). There is a significant indication from the literature that taste quality is an influential factor in consumer behavior by providing a measure to justify price premium (Shaw-Hughner et al., 2007).

The price premium also affects the consumer perceptions toward the quality of organic products (Shaw-Hughner et.al., 2007; Harrison, 2009). However, when it comes to food quality, there are serious questions about how both consumers that purchases it and supermarkets who market and sell it are judging the overall quality of products. This was the experience in the UK with Tesco, when the company experimented with lowering the price of organic products slightly below the price of its conventional food equivalent there was an extremely low conversion rate. That is, customers are likely to purchase organic in that circumstance, but they are very unlikely to continue purchasing organic when the price rises again.

Tesco attributes this to customers experiencing organic food and finding they cannot tell any difference regarding quality (Pierce, 2009). Experts (Harrison, 2009) have argued that quality standards for conventional food are part of the reason organic food gained prominence in the first place. Appearance and size standards set by supermarkets necessitated an increasing use of pesticides and other chemicals to meet yield requirements as well as quality standards (Harrison, 2009).

Additionally, in July 2009 a landmark report released in the UK raised serious questions about the actual nutritional value of organic food over its conventional competitors. Dangour et al., (2009)

found that there was virtually no nutritional difference in organic food, undermining consumer perceptions about quality.

PURPOSE OF THE RESEARCH PAPER

This paper attempts to answer a specific question/issue of what are the determinants which lead ever buy organic food and beverages products? Specifically, the aim is to examine the impact of socio-demographic characteristic (Age) and knowledge (where to buy organic food) on buying intention of organic food and develop a predictive model of buying intention.

MATERIAL AND METHODS

The research paper goal necessitated the identification of the various factors that influence the purchase of organic food. The literature review was used in the identification of potential factors affecting a consumer's purchasing behavior of organic food products. Following the literature review research phase, the researchers conducted a number of semi-structured interviews with industry experts in order to gather qualitative insight into what had been uncovered in the academic literature.

To best augment the quantitative data were gathered from consumers, through the design of questionnaire survey. Data collection took place during the last two weeks of January 2017. Purchasers were approached during their food shopping in outlets of three retail chains in two different areas of Huntsville (one outlet per chain) using a structured questionnaire. Overall, 40 people were approached, 23 of which were qualified for sample inclusion in the time frame of the survey (57.5 percent). SPSS IBM Statistics software v.23 was used for all statistical analysis.

Hypotheses

H1: There is a significant impact of age consciousness on ever buy organic food and beverages products intention.
H2: There is a significant impact of knowledge (know where to buy organic food and beverage products) on ever buy organic food and beverages products intention.

Modeling Methodology

Oluwoye (1992) reported that explaining the often complex relationships that exist in the real world is a fundamental objective of mathematical models. Such complexities usually arise from the fact that any variables act to produce some reaction (i.e., no single cause) and that there are interdependencies among the variables. Variables in mathematical models are usually designated as either endogenous or exogenous variables. In a given problem, exogenous variables are the predetermined variable or independent variables while endogenous variables are determined by exogenous and other endogenous variables. In real world complexities, endogenous variables, which may influence other endogenous variables, are also determined by the exogenous variables. As a simple example in Figure 1 below, for a particular point in time, age and knowledge will affect employment and both in turn will influence buying organic food intentions. Furthermore, the third property is that of prediction as discussed in 1992 by the author. The predictive power of a model builds upon description in that it can predict values of variables for which there are not yet measurements. These predictions can then be used for some future point in time assuming a single future form. Graphically a predictive model might look like the conceptual framework in Figure 2 below.

RESULTS AND DISCUSSION

Data Analysis Methods

Descriptive statistics were used to analyze demographics of the sample. Cronbatch's Alpha Reliability Coefficients were used to measure the reliability of the instrument. Pearson's Correlation Analysis was used to measure the levels of association between each individual determinant with purchase intension. A Multiple Linear Regression Model was developed to assess the degrees of impact from each individual determinant on purchase intention of organic food and also to emphasize the key determinants of purchase intention of organic food.

Regression Model

EBOFI =f(1AGE, KWBOF) ---------- Eq (1)

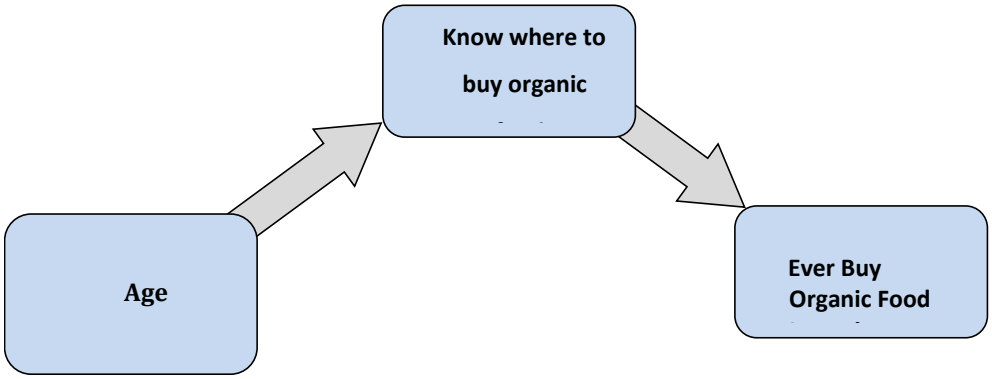

Figure1. Conceptual Model.
Source: Modified from Oluwoye (1992, 2009)

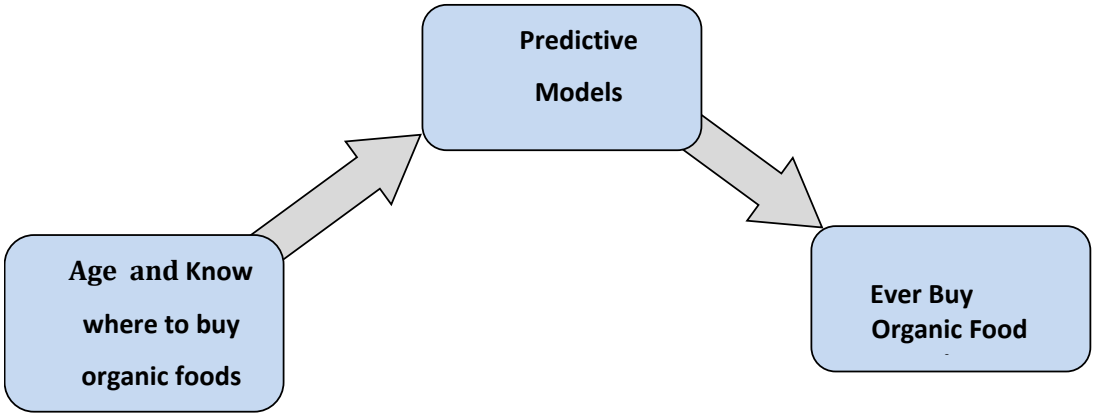

Figure 2. Conceptual Model.
Source: Modified from Oluwoye (1992, 2009)

EBOFI =β0 + β1AGE+ β2KWBOF+ Ɛi ----------Eq (2)

Where;
EBOFI = Ever Buy Organic Food Intention
β0 = Constant Factor
AGE =Age Consciousness
KWBOF =Knowledge (Know where to buy organic foods)
Ɛi = error term
β1, β2 = Coefficient of each factor

Descriptive Analysis

The socio-demographic profile of the overall sample is shown in Table 1. The mean of each variable revealed respondents' attitudes towards organic food products. The standard deviation shows the size of the range of answers (fairly high in almost all cases based on these results). This is furtherreflected by the minimum and maximum answers provided for each variable. With the exception of gender and household income, the range of answers almost universally shows a complete difference of opinion with answers on polar opposite ends of the scale. The relatively high standard deviation also reflects a divergence of opinion by respondents on most questions, with the possible exception of gender.

Table 1. Descriptive Statistics: Mean Respondent's Socio-Economic Factors Results.

	N (Missing System)	Minimum	Maximum	Mean	Std. Deviation
Gender	23	1	2	1.16	0.5
Age	23	2	8	3.87	2.17
Education	23	2	8	6.48	2.15
Household Income	22 (1)	1	4	2.59	0.91
People in household Income	22 (1)	1	5	2.91	1.27
Marital Status	22 (1)	1	5	2.27	1.61

Source: Oluwoye et al., (2017).

Table 2. Mean Results of Respondents Knowledge and Awareness of Organic Food Products Results

	N (Missing System)	Minimum	Maximum	Mean	Std. Deviation
Familiar with term Organic food	21 (2)	1	2	1.14	0.359
Place to buy Organic food	21 (2)	1	2	1.19	0.402
Ever buy organic food products	21 (2)	1	2	1.24	0.436
Believe in organic products are healthier	21 (2)	1	2	1.05	0.218
Believe in information publishing about organic advantages	22 (1)	1	3	1.82	0.958

Source**:** Oluwoye et al., (2017).

The means of each variable in Table 2, revealed that respondents attitudes knowledge towards organic food products. The standard deviation shows the size of the range of answers (very low in almost all cases based on these results). This is further reflected by the minimum and maximum answers provided for each variable. It should be noted in Tables 1 and 2 above, the missing system suggests that all the subjects did not answer some questions that were included in the organic food purchase database.

Correlation Analysis

Spearman correlation r was used. The statistics is used to determine the degree of association between organic food buying intention and age variable. The Table 3 below shows the Spearman rho correlation r and the coefficient is found not significant at one –tailed percent level.

The above table shows that the significance is greater than 0.05, the rank correlation is not significant at the 5% level for a one-tail test, one can conclude that there is a negative relationship in the ranking of the buying intention of organic food products by EBOFI and AGE (r = -0.287). From the above table one can see that there is a significant relationship emerged between the EBOFI and KWBOF (r =0.868, p<0.000. The present results suggest that consumers Knowledge (Know where to buy organic foods products increases consumers‟ intention of buying organic food or beverage products.

Multiple Linear Regression Analysis

Table 4 represents the summary of the model based on Table 1; the goodness of fit of the model was at

Table 3. Spearman's rho correlation matrix for consumers ever buys organic food products intention and belief in information and age.

	EBOFI	KWBOF	AGE
EBOFI	1.000	0.868**	-0.287
		p= 0.000	*p*= 0.104
KWBOF	0.868**	1.000	-0.487
	p= 0.00		*p*= 0.013*
AGE	-0.287	-0.487	1.000
	p= 0.104	*p*= 0.013*	

Note: ** correlation significant at the 0.01 level (1-tailed); *correlation significant at the 0.05 level (1-tailed).

Table 4. Coefficients and Model Diagnostics.

Equation (Model)	Dependent Variable Ever buy organic food and beverage products (EBOFI)	Constant	Independent Variables	
			Age	Know where to buy organic food and beverage products (KWBOF)
.	EBOFI	-0.167 (0.207)	0.044 (0.023)	1.034 (0.125)

(Note: Standard Error in Parenthesis)

Model Diagnostics I

Model	Adj R2	SER	F- Value	Sig F	DF	DW
	0.772	0.208	34.944	0.000	2,18	

Model Diagnostics II

Variables	t- statistics	P- value (Pr>t)
Age	*p* (1.927)	0.070
KWBOF	*p* (8.251)	0.000
Constant	*p* (-0.808)	0.430

Adj R2 = Adjusted R2; SER = Standard Error of the estimate;
Sig F = Significant F-Value; DF = Degree of freedom;
DW = Durban Watson; *p*-value = probability t statistics value;
t- statistics = student t- statistics value.

good level. P values and F values provided the evidence for ensuring the predictability of the model. The adjusted R^2 reported as 0.772 values which predict 77.2% of the dependent variables through independent variables.

Table 4 represents the Coefficients of Multiple

Linear Regression and was revealed that the degrees of impact of age concern and knowledge of where to buy organic food products influence on ever buying intention of organic food products. Knowledge of where to buy organic food products was reported the highest regression value of 1.034 which was significant at 99% level of confidence and provided the evidence that increase in one unit of knowledge of where to buy organic food products lead to increase in 103% of purchase intention. Age corniness was reported as 0.044, which was significant at 90% level of confidence and provided the evidence that increase in one unit of age consciousness lead to increase in 4.4% of ever buying purchase intention, other variables held constant. The final equation derived from table 4 is shown below.

EBOFI =-0.167 + 0.044AGE+ 1.034KWBOF+ Єi---Eq (3)

Hypothesis Testing

The results of multiple linear regression analysis provided supportive evidence to prove the two hypotheses of the research. The first hypothesis was H1: There is a significant impact of age consciousness on ever buying purchase intention of the organic food. The coefficient of regression between age consciousness and ever buying purchase intention was 0.044 and $p< 0.070$. It can be proved that, H1 was accepted under the confidence level of 90% and there is a significant impact from age consciousness on ever buying purchase intention.

The second hypothesis was H2: There is a significant impact of knowledge of where to buy organic food products on ever buying purchase intention of the organic food products. The Coefficients of regression between and ever buying purchase intention was 1.034 and $p< 0.001$. It can be proved that, H2 was accepted under the confidence level of 99%. There is a significant impact of knowledge of where to buy organic food products on purchase intention of organic food products.

CONCLUSION

This study was conducted to find out the determinants of buying organic food behavior in reference to the question “Do you ever buy organic food or beverage products”? The results of the data analysis demonstrated determinants of ever buying organic food products intentions of sample of Huntsville, Alabama customers reveals that consumers knowledge of where to buy organic food products acts as a predictor and have a direct influence on decision process when buying of organic food products. The finding of the research show an increase in one unit of level of knowledge of where to buy organic food products leads to increase in 103.4% of ever buy organic food and beverage products.

Furthermore, increase in one unit of customer’s age leads to increase in 4.4% of ever buy organic food and beverage products. With the increasing level of knowledge of where to buy organic food products and age of customers tend to have more impact with ever buying intention of organic food or beverage products. The paper concludes that stimulating buying intention would employ as one of the strategies to persuade consumption and increase the demand for the organic foods. Policy makers need to draw special attention to improving knowledge levels and promoting the specific health benefits of organic food, in order to stimulate real buying decision.

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